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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,895	10/31/2003	Niranjan Damera-Venkata	200205808-1	2961

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EXAMINER	
VO, QUANG N	
ART UNIT	**PAPER NUMBER**
2625	

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06/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/698,895	DAMERA-VENKATA, NIRANJAN	
	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/31/03;04/17/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 11, 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention "...sum to unity at dc,". Applicant does not define what "dc" is. Corrections are needed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-10, 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by (Color Error Diffusion With Generalized Optimum Noise Shaping by Niranjan Damera-Venkata and Brian L. Evans Published 2001).

With regard to claim 1, Damera-Venkata and Brian disclose an error diffusion halftoning method comprising: using a quantizer having an input and an output; and using a system having a bandpass characteristic to modify the quantizer input without feeding the quantizer output directly into the quantizer input (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 2, Damera-Venkata and Brian disclose wherein if the quantizer was replaced by a source for injecting uncorrelated noise and no input was present to the system, the system would shift the noise injection from a high frequency range to a middle frequency range (see paragraph between formula 18 and formula 19 in part 6. Simulation Results).

With regard to claim 3, Damera-Venkata and Brian disclose wherein using the system includes using at least one filter to provide the bandpass transfer function B(z) : B (z) = ((1 - alpha) H (z) + (alpha)*H (z) K (z)) / (1 – (alpha)*H (z) + (alpha)*H (z) K (z)), where H(z) and K(z) are transfer functions; and .alpha. is a scalar that controls pixel clustering (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 5, Damera-Venkata and Brian disclose wherein using the system includes low pass filtering the quantizer output with a first linear weighting filter, generating an error signal from the filtered output signal and a quantizer input signal; and low pass filtering the error signal with a second linear weighting filter (see part 3. Vector Color Error Diffusion and part 4. Formulation of The Design Problem and figure 1). Here a low pass filter used to eliminate noise.

With regard to claim 6, Damera-Venkata and Brian disclose wherein using the system includes generating an error in response to the quantizer input and output; and applying an infinite impulse response filter to the error signal, an output of the infinite impulse response filter used to modify the quantizer input (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 7, Damera-Venkata and Brian disclose Apparatus for performing error diffusion halftoning, the apparatus comprising: a quantizer having an input and an output; and filtering means having an effective bandpass transfer function for modifying the quantizer input without feeding the quantizer output directly into the quantizer input (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 8, Damera-Venkata and Brian disclose wherein the bandpass transfer function B(z) is B (z) = ((1 - alpha) H (z) + (alpha)*H (z) K (z)) / (1 – (alpha)*H (z) + (alpha)*H (z) K (z)), where H(z) and K(z) are transfer functions; and .alpha. is a scalar that controls pixel clustering (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 9, the subject matter is similar to claim 7. Therefore the rejection on claim 9 is the same as the rejection on claim 7.

With regard to claim 10, the subject matter is similar to claim 8. Therefore the rejection on claim 10 is the same as the rejection on claim 8.

With regard to claim 12, the subject matter is similar to claim 5. Therefore the rejection on claim 12 is the same as the rejection on claim 5.

With regard to claim 13, the subject matter is similar to claim 6. Therefore the rejection on claim 13 is the same as the rejection on claim 6.

With regard to claim 14, the subject matter is similar to claim 2. Therefore the rejection on claim 14 is the same as the rejection on claim 2.

With regard to claim 15, the subject matter is similar to claim 9. Therefore the rejection on claim 15 is the same as the rejection on claim 9.

With regard to claim 16, Damera-Venkata and Brian disclose wherein the filtered error signal is used to modify the quantization input (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 17, Damera-Venkata and Brian disclose wherein the filtering is based on the noise transfer function : (1 - H (z)) / (1 – (alpha)*H (z) + H (z) K (z)) where H(z) and K(z) are transfer functions; and .alpha. is a scalar that controls pixel clustering (see Part 3. Vector Color Error Diffusion and figure 1).

With regard to claim 19, the subject matter is similar to claim 12. Therefore the rejection on claim 19 is the same as the rejection on claim 12.

With regard to claim 20, the subject matter is similar to claim 13. Therefore the rejection on claim 20 is the same as the rejection on claim 13.

With regard to claim 21, the subject matter is similar to claim 9. Therefore the rejection on claim 21 is the same as the rejection on claim 9.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on 5712727406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Quang N. Vo 5/23/07
Patent Examiner

TWYLER LAMB
SUPERVISORY PATENT EXAMINER